

REMARKS

Reconsideration of the present application is respectfully requested.

Claims 3, 4 and 10 previously presented for examination remain in the application. Claims 3 and 10 have been amended to more clearly and distinctly claim the subject matter that applicant regards as the invention. New claims 23-33 have been added.

The Title stands objected to as being not descriptive. Applicant has amended the title as indicated to be more clearly indicative of the invention to which the presently presented claims are directed.

Claims 3 and 10 stand rejected under 35 U.S.C. § 102(b) as being considered to be anticipated by U.S. Patent No. 6,075,240 to Watanabe et al. ("Watanabe").

Claim 3 includes the limitations

a plurality of photodetector elements disposed on a semiconductor substrate; and

a compound light directing member comprising a light pipe bundle, at least some of the light pipes to individually direct light energy from one or more sources onto one or more of the photodetector elements,

outputs of the photodetector elements being electrically coupled using a compound eye wiring pattern such that an image associated with one or more sources is synthesized at output circuitry, the photodetector elements and compound light directing member together comprising a substantially planar artificial compound eye.

(Claim 3)(emphasis added)

Applicant respectfully submits that Watanabe fails to teach or suggest the claimed features of applicant's invention including at least the photodetector having outputs electrically coupled using a compound eye wiring pattern such

that an image associated with one or more sources is synthesized at output circuitry.

Watanabe discloses a hand-held optical fiber linear scanner for reading color images formed on a surface. According to Watanabe, the scanner head is all optical and includes no electronics. For the embodiment disclosed in Figures 14-18 referenced in the Office Action, an optical fiber bundle, a 2D image sensor and a light source coupling are included.

In operation, light emitted by a source reaches the bottom of the sensor and is partially transmitted to the fiber bundle. At the scanner head, the light emerges from the fiber and irradiates a document. The reflected light comes back in the same fiber because the fiber end is very close to the document (i.e. less than the fiber diameter). The light emerges at the other end of the fiber and is detected by the sensitive part of the photodiodes. (Watanabe, e.g. col. 7, line 45 – col. 8, line 7)

The fibers are bundled randomly and a look-up table is used to associate particular fiber numbers with particular pixel numbers. (Watanabe, col. 8, lines 42-62).

Watanabe does not teach or suggest electrically coupling outputs of photodetectors using a compound eye wiring pattern as set forth in claim 3.

For at least this reason, claim 3 is patentably distinguished over Watanabe. Independent claims 10 and 29 include a similar limitation. Claims 4 and new claims 23-25, new claims 26-28 and new claims 30-33 depend from and

further limit claims 3, 10 and 29, respectively. Thus, claims 4, 10 and 23-33 should also be found to be patentably distinguished over Watanabe.

It will be noted that Watanabe also fails to teach or suggest a substantially planar compound eye as set forth in claims 3 and 10 (note that the embodiment of Figure 14 as elaborated in Figure 18 includes an optical fiber bundle that extends to the scanner head), a sensor in which the image source and the light pipes or fibers are separated from the image to be received by at least .1 meter as set forth in claims 23, 26 and 30, a light pipe bundle that forms an optical window in an integrated circuit package as set forth in claims 24, 27 and 33 or a light pipe bundle that preferentially captures light from at least two different directions as set forth in claims 4 and 32.

Claims 3, 4 and 10 stand rejected under 35 U.S.C. § 102(e) as being considered to be anticipated by U.S. Patent Application Publication 2002/0096629 to Korein ("Korein").

Korein discloses an apparatus for transforming the shape of an image in a way that utilizes substantially all the available pixels for both the image generated and the sensor to which the image is projected. According to Korein, an apparatus of one embodiment includes an optical system, a fiber optic bundle and a sensor. The first end of the fiber optic bundle is preferably shaped in the form of the image and the shape of the second end more closely approximates the shape of an image sensor.

To use the sensor, a mapping step is performed and a look-up table is generated, which is indexed by sensor coordinates and in which each element

contains image coordinates. (Korein, col. 3, paragraph [0039] and col. 4, paragraph [0045].)

Korein, like Watanabe, does not teach or suggest coupling the outputs of photodetector elements using a compound eye wiring pattern.

For at least this reason, claim 3 is patentably distinguished over Korein. As described above, the remaining claims either include a similar limitation or depend directly or indirectly from claims that include a similar limitation and thus, should also be found to be patentably distinguished over Korein.

It will be noted that the device of Korein also does not appear to provide a substantially planar artificial compound eye as set forth in claims 3 and 10 (the transition from a circular or elliptical cross section to a rectangular cross section appears to require that the fibers are long enough to make this transition), or a light pipe bundle that forms an optical window in an integrated circuit package as set forth in claims 24, 27 and 33.

Claims 3 and 10 further stand rejected under 35 U.S.C. § 102(e) as being considered to be anticipated by U.S. Patent No. 6,320,174 to Tafas et al. ("Tafas").

Tafas discloses a composing microscope directed towards scanning a large area of a specimen in a minimal amount of time. For the embodiment described in reference to Figures 4-5 referenced in the Office Action, the microscope includes optical projecting systems aligned in rows comprising optical fibers or bundles of optical fibers. An optical sensor (e.g. a CCD camera

or CMOS active pixel sensor), an optical reflector (e.g. a mirror or prism) and an image acquisition device are also included.

In operation, as the specimen is moved along, the optical projecting systems scan portions of the specimen and acquire related images which are projected to the optical sensor for simultaneous digitalization. The digitalized images and information regarding their locations are stored in the image acquisition device (e.g. a computer).

For one embodiment, the final consecutive image is composed in computer memory by imaging software that will reshuffle acquired images on the basis of their known positional information. (Tafas, col. 6, line 6 – col. 7, line 23).

Tafas, like Watanabe and Korein, does not teach or suggest coupling the outputs of photodetector elements using a compound eye wiring pattern.

For at least this reason, claim 3 is patentably distinguished over Tafas. As described above, the remaining claims either include a similar limitation or depend directly or indirectly from claims that include a similar limitation and thus, should also be found to be patentably distinguished over Tafas.

It will be noted that the device of Tafas also does not appear to provide a substantially planar artificial compound eye as set forth in claims 3 and 10, a sensor in which the image source and the light pipes or fibers are separated from the image to be received by at least .1 meter as set forth in claims 23, 26 and 30, a light pipe bundle that forms an optical window in an integrated circuit package as set forth in claims 24, 27 and 33 or a light pipe bundle that preferentially captures light from at least two different directions as set forth in claims 4 and 32.


Based on the foregoing, applicant respectfully submits that the relevant objections and rejections have been overcome and claims 3, 4, 10 and 23-33 are in condition for allowance. If the Examiner disagrees or believes that further discussion will expedite prosecution of this case, the Examiner is invited to telephone applicant's representative Cynthia T. Faatz at (408) 765-2057.

If there are any charges due, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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